For All ATARI Computer Systems

PARROT

ALPHA SYSTEMS

PARROT

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An Alpha Systems Product

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PARROT

Table of Contents

Introduction to PARROT

The PARROT system is a powerful sound recording, playing, and manipulating system for the Atari computer. It lets you record pure digital sound, play it, and manipulate it in many different ways.

The PARROT package contains:

1 PARROT Manual

1 PARROT Interface
  - the hardware device

1 Jumper Wire
  - for connects the PARROT interface to sound sources

1 PARROT System Disk
  - contains these files:

Side 1 Files

SAMPLER - This program works with your PARROT audio interface. It lets you record and play back sound, and save sounds to disk

EMULATOR - Allows you to manipulate graph and change sounds, and play your computer as a musical instrument.

NOTES.DIG (structured) - musical instrument sounds.

DRUMS.DIG (structured) - drum sounds.

SMOKE.DIG (structured) - this file is used to

demonstrate how your Atari can be an instrument.

SOUNDS.DIG (structured) - everyday sounds used to play songs.

Side 2 Files

PLAYER - This program plays back sound files created with PARROT. It is public domain and can be put on all your disks with PARROT sounds.

GUESSNUM - A simple guess the number game written in BASIC to demonstrate how to use PARROT sounds in your BASIC programs.

LOADPLAY.LST - This BASIC language subroutine is ENTERed into your programs and used to play PARROT sounds.

THRILLER.DIG (unstructured) - a sample of digitized sound.

GUESSNUM.DIG (structured) - used with the GUESSNUM program.

INTRODUCTION TO DIGITAL AUDIO

What is digital audio?

Your new PARROT package produces sound in much the same way a compact disk does. It stores sound as a series of numbers, or digits, that's why it's called digital audio. When the sound is fed into the computer, the computer repeatedly determines what level the sound wave is at, and stores this level as a number. This quick checking is called sampling. The computer can reproduce the sound by vibrating the TV's speaker accroding to the pattern of numbers.

Gettting Started

LOADING THE PARROT DISK

Insert side 1 of the PARROT Master Disk into drive #1. Remove the BASIC Cartridge, and turn your computer on. XL and XE owners should press and hold the OPTION key while turning on the computer, and continue holding it down while the program loads (to disable BASIC). The main PARROT menu will appear on the screen.

The main PARROT menu offers two options. The first option is the SAMPLER program. This program is used to record sounds. Refer to Chapter 2 for more details about this program. The second option is the EMULATOR program. This program allows you to graph and manipulate sounds, and to play your Atari as a musical instrument. This program is explained in chapters 4, 5, and 6.

Try both of the demos described below, before you try any serious recording. These demos are designed to introduce you to the PARROT package.

LISTENING TO SAMPLE SOUNDS

PARROT uses the TV speaker to reproduce sound. This demo to introduce you to the PARROT package, it lets you hear what PARROT can do. All of these commands are explained in detail in other chapters.

1. Load the PARROT Master Disk as described above. Press "1" to choose the SAMPLER program.

2.The demo file, called "THRILLER", is on side 2 of the PARROT Master disk. Put side 2 of the PARROT disk in drive #1.

3. Press '5' for load, then type in "THRILLER" for the file name. Type only the letters, not the quotes.

4. Press '3' for Play, and enter a speed of 54.
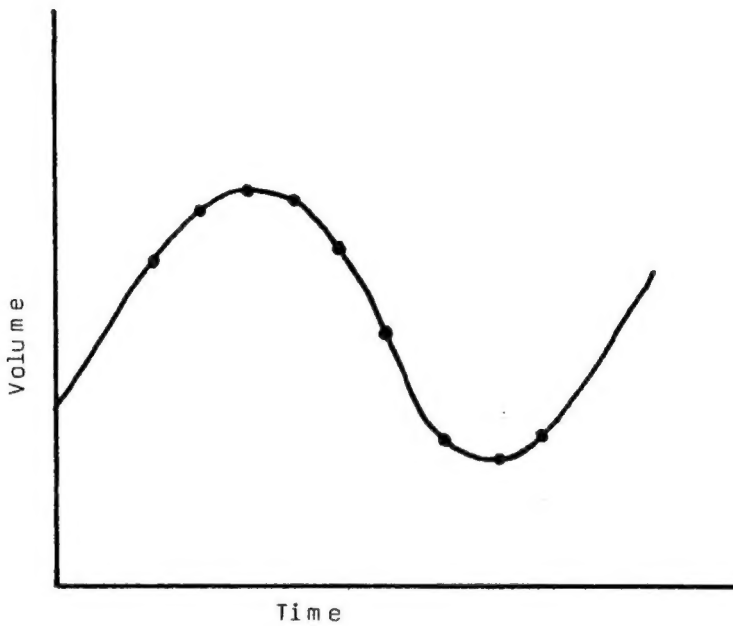
Each dot represents a sample of the sound,
and is stored as a digital value.
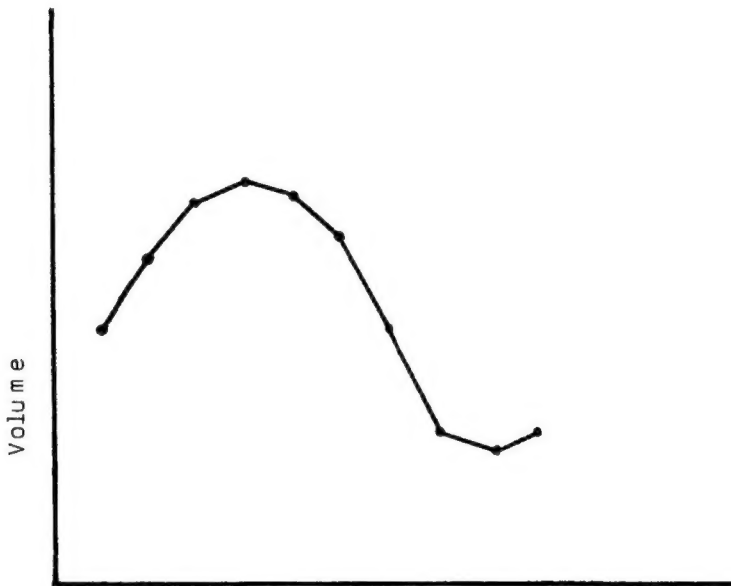
The digital samples recreate the sound
More samples per time unit produce better sound,
fewer samples reduce the sound quality

5. Turn up the volume, and press START. Sit back and enjoy!

This demo was recorded from a battery-powered Snoy Walkman, a PARROT, and an Atari 800. This demo should give you a good idea of how your recordings can sound.

PLAYING THE EMULATOR

The EMULATOR program is the program that turns your Atari into a musical instrument. This tutorial demo introduces you to the EMULATOR program, and shows you how to 'play' your Atari keyboard.

1. First, load the PARROT Disk as described earlier. Press '2' to choose the EMULATOR program.

2. The EMULATOR menu will appear on the screen. It doesn't look like most menus (see the picture on pg 15). The top part of the screen is covered with 9 Track Boxes, each box describes a different section of the sound file you will be using. The commands are listed on the bottom. Complete explanations of tracks, the EMULATOR menu, and the EMULATOR commands are in Chapter 4, so don't worry about them now.

3. Press 'L' and RETURN to load a file. The computer will prompt:

"Enter a name (8 letters max):.
For this demo, type SMOKE and press RETURN. The computer will prompt:
O.K. to erase current tracks?
For this example, press 'Y' and RETURN. The track boxes will fill with information about the SMOKE file.

4. Now we're ready to play. Type 'P' and press RETURN. The screen will blank. To choose wich sound you want the computer to play, you must press a Track Select Key. The Track Select Keys are X̲, C̲, V̲, B̲, N̲, M̲, ̱, ̱, and /̲, on the bottom row of the keyboard (see

6

the keyboard diagram, pg 20)

5. Follow the 'music' below. Press the keys indicated, and hold them for the number of 'beats' shown below. If you want a smoother flow between the sounds, press down the next note before releasing the first one. This makes a steady transition, without any silences betweeen the notes.

First press V to choose track #3.
KEYS==> F J L   F   J :   L   F J L J F F
BEATS==> 1 1 2   1/2 1 1/2 2   1 1 2 1 1 2

Now press X to choose track #1
  F J L   F   J ;   L   F J L J F F
  1 1 2   1/2 1 1/2 2   1 1 2 1 1 2

There's also a NOTES file and a SOUNDS file to give your computer different musical sounds. Use them to play the songs in Appendix A. Or make up your own songs!

Recording Sound With PARROT

Your PARROT package enables you to digitize sounds from almost any sound source, and use those sounds with your Atari in any way you like. The PARROT Audio Interface and the PARROT SAMPLER program are used to record sound. The sound is fed into the computer through the PARROT Interface, and then digitized with the SAMPLER program. You can also fine-tune the PARROT Interace, save and playback sound, and check the disk directory with the SAMPLER program.

GETTING READY TO RECORD

1. Setting up the PARROT Audio Interface.

    A) With the computer turned off, plug the PARROT Interface into joystick port #2. Make sure it's completely inserted.

    B) Plug your sound source into the PARROT Interface. A microphone may be plugged directly into the input jack on the PARROT Interface. A cassette player or other sound source may be connected using the jumper wire supplied with your PARROT package. Plug one end of the jumoer wire into the earphone or aux-out jack on your sound source, and the other end into the input jack on the PARROT Interface.
    Tape recorders and radios work best, so practice recording sounds with these before trying to record from a microphone.

Gain Control
Knob

To Joystick Port #2

Input Jack

8
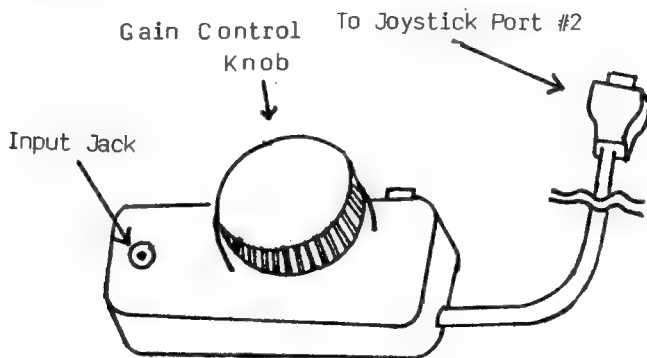
You may need an adaptor if the jumper wire doesn't fit your sound source. Adaptors are available from electronics stores such as Radio Shack.

2. Fine-tunning the PARROT Interface.

Fine-tunning adjusts the PARROT to your particular sound source. This improves the quality of your digitized sounds,and must be done each time you hook up a new sound source, or adjust the volume on your sound source. The SAMPLER program is used to fine-tune the PARROT Interface.

A) Load the PARROT disk as described in Chapter 2, Loading the PARROT Disk.

B) Press 1 and hit RETURN to choose the SAMPLER program. The menu below will appear on the screen.

PARROT Sampler Program

1. Fine-tune
2. Record
3. Playback
4. Save
5. Load
6. Disk Dir.

You may want to hear a quick demo of a peice of music recorded with PARROT before you try recording your own, Refer to Chapter 2, Listening to Sample Sounds, for sound demo instructions.

C) Press '1' and RETURN to choose the Fine-Tune option. The screen will be blank througout the fine-tunning process. The OPTION key returns you to the SAMPLER menu. Turn the up volume on your TV or monitor, so you can hear what's happening. Follow the instructions below for your sound source.

9

For a Microphone:
    Whistle or hum into the microphone while Turning the Gain Control, and choose the position that sounds best. Turn the knob all the way in one direction, then slowly turn it back until you hear the sound coming out of the TV speaker. When it's properly adjusted, hit the OPTION key to return to the main menu.

For a cassette player or other powered sound source:

    Put in and turn on a tape with music, or tune in a station on your radio, etc. Adjust the volume control on the sound source - you can use treble, bass, and any other sound controls you have, too - and your PARROT Gain Control until you find the best possible sound. The sound you hear in this test is identical to what the computer will reproduce on playback. Try adjusting your volume with different Gain Control settings. It can take some adjusting between the volume and Gain Control to find the right combination for the best sound.
    Press OPTION to exit this mode.

NOTE: Radios, stereos and motorized devices can produce interference that may create unwanted noise on your recordings. Be sure all other stereos, radios, etc. are turned off, except the one you will use. Also, plug your computer into a wall outlet by itself to get the best quality sound. Your computer's power should be clean for recording, so don't plug other things into the same outlet if possible. Excellent results can be obtained from a battery-powered personal tape player (like a Sony Walkman).

RECORDING THE SOUND

    After your PARROT Interface is properly adjusted and fine-tunned, you're ready to record. Choose option 2, Record, from the SAMPLER menu.
    First, the computer will display the maximum amount of memory,

10

in K, available for recording. You can enter this amount by pressing RETURN. Or, type in the amount of memory you want to use, in K, with enough blank spaces to cover up the other number completely, and hit RETURN. One K equals 1024 numbers, and will give you about 1/2 second of sound in the highest quality mode.

Next enter the recording speed. 1, the fastest speed, is printed automatically. You can choose this speed by pressing RETURN. To use a slower speed, type in the speed you like and press RETURN. Larger numbers allow you to make longer recordings, but the sound quality is greatly reduced.

Now you are ready to record. If you're recording from a tape, find the place on your tape that you want to record, and position the tape about one second before it. This gives the tape recorder time to "come up to speed". If you are recording from a radio or other sound source, be ready to act when you hear what you want to record. Now turn off any extra radios, printers, or other appliances that might be on. When you are ready, start your sound source (allowing a second or two for tapes to come up to speed) and press START on your computer. The screen will go blank and the computer will sample the sound. When it's done, the SAMPLER menu will re-appear.

After you have recorded your sound, you may want to listen to it before you decide to save it. Use the Playback option, #3. If it's not quite what you wanted, try again. When you're satisfied, save the sound to a blank, formatted disk, (or any disk with at least 250 free sectors) using option 4.

Hints For Best Recording

1. Plug your computer into a separate wall outlet from any other electrical components. Other devices like stereos and TVs can create electronic interference that can add noise to your recordings. Listen to your recording play back at speed 1. At that high speed, interference will be a buzzing sound. Although this interference is not as noticeable at normal speed, it does reduce the sound quality of your recordings. Your recordings will sound best if your computer is plugged in separately, and all other electronic devices are turned off.

11

2. Record good quality sound. The better the original sounds, the better the recording will sound. What you hear is what the computer "hears".

3. For the highest quality sound, record the sound at a reduced speed, then speed it up when it's played back. If you can reduce the speed of your tape player, or play a 45 record at 33 1/3, you can get a higher sound quality when the recording is played back at normal speed. This technique takes more memory, but it may be worth it for a good short piece of music, or a musical instrument sample of high quality.

OTHER SAMPLER OPTIONS

A number of other functions are available from the SAMPLER program. Below is a breif description of each.

Playback

The playback command, #3, allows you to listen to sounds you have just recorded, or files you have loaded from disk. After you choose playback, you must enter a playing speed in the range of 1 to 255. A speed of 54 is normal. Higher numbers will play slower, lower numbers will play faster. Try different speeds to hear the results. Sounds recorded at a higher speed should be played back with a speed higher than 54 to recreate the origrinal sound.

Save

The Save command, #4, allows you to save your digital recordings on a disk. Before saving a file, it's a good idea to check the disk directory (option 6) to see if there is enough free space on the disk for your file. It takes about 246 sectors to save 30K of music. You must enter a filename for your file, 8 letters or less. If you decide not to save the file, you can go back to the main menu by pressing RETURN.

Load

This command, #5, allows you to load files that have been saved on disk. You can check the contents of the disk first with

command #6, Disk Directory. You must enter the filename of the file you want to load, 8 letters or less. (Note for advanced users: you may use wildcards * and ?).

Disk Directory
This command allows you to see the directory of the disk in drive 1. Press '6' and the directory will appear. Press any key to return to the menu.

Using PARROT Sound Files

INTRODUCTION

The PARROT Emulator program lets you turn your Atari into a digital synthesizer with capabilities like those costing thousands of dollars. It lets you graph and edit sounds recorded with the PARROT interface. It also allows you to create your own custom wave format. Best of all, it turns you computer keyboard into a musical instrument. It lets you instantly select between 9 different sounds and play each with three full octaves of notes.

The Emulator is also used to manipulate and combine sounds recorded with the Sampler program. The sounds can be saved in sections called tracks. Each of the 9 tracks contain a separate word, sound, or musical instrument. The raw sound files recorded with the Sampler program are called unstructured files. A file that has been split into tracks is called a structured file. There are several sample structured files on your PARROT Master Disk, and some unstructured files on the back. This program can be used to separate sounds out of unstructured files and combine them for playing a song, or for use in your own BASIC programs.

To load the Emulator program:

1. Follow the instructions in Chapter 2, Loading the PARROT Disk.

2. Press '2' and RETURN to choose the Emulator program. The menu below will appear on the screen.

The menu screen is divided into sections. At the top of the screen is the program title. Directly below this are track boxes in a 3x3 matrix, or grid, numbered 1-9. Below these are the commands for the Emulator, always on the screen for convenient reference. Below the commands is the memory strip, a single line which displays your memory status. At the bottom of the screen is your work space, where all of your typing will appear.

In the workspace, it will say "ENTER COMMAND". At this prompt you may enter any of the possible commands by typing the first letter (the one in inverse) and pressing RETURN.

14

1 (X)	2 (C)	3 (V)
4 (B)	5 (N)	6 (M)
7 (,)	8 (.)	9 (/)

Define track   Erase track(s)
File directory   Graph/edit memory
Load file   Move memory
Play   Save file

[23724]   Free:23724-45824   [45824]

Enter command:?

.The next section of this chapter is a list of the EMULATOR commands with a breif description of each. Since some of the features of PARROT can be a bit tricky, first-time users may want to refer to the last two sections of this chapter, Playing Your Atari as a Musical Instrument, and Structuring Your Files, for step-by-step instructions.

<div align="center">COMMANDS</div>

F-File Directory
This commands displays the digital audio files on the disk in drive #1. The directory will remain on the screen until you press RETURN.

L-Load File
This loads files from disk into the computer's memory. Press L and RETURN. The computer will prompt you to enter a filename. Filenames must be 8 letters or less.
     If the file you have selected is an unstructured file not yet divided into tracks, (files created with the Sampler program are unstructured), the computer will display this message:

filename.DIG is an unstructured file XXX bytes long. Load at what address?

The lowest available free memory address will be displayed. You may enter your own address, or select the default address by pressing RETURN. If the file is too large to fit completely, a strip of blocks, each representing 1K of memory, will be displayed. Choose the section you wish to load by using the cursor control arrows, and press RETURN.

A structured file is one that has been split into tracks, each track contains a different sound. If you are loading a structured file, the computer will ask if it is O.K. to write over tracks currently in memory. If it is O.K., press 'Y'. If not, press 'N'. In a structured file, the information about each track of the file is displayed in the track boxes. At the top of each track box is the track number, with arrows on each side. Next is the keyboard character that activates the track in play mode, called the Track Select Key. Underneath the Track Select Keys are the memory locations where the track starts and stops. Next are the RPT and AUD symbols. RPT indicates a repeating track. These tracks will play as long as a note key is pressed. The AUD symbol means the track will play as soon as the Track Select Key is pressed. This lets you switch tracks quickly. When this is off, the track will not play until the note keys are pressed (see Playing Your Atari as a Musical Instrument). Last is a one word description of the sound.

P-Play Mode

You can use this mode to listen to the sounds on each track, and to play your Atari as a musical instrument. When you press P and RETURN the screen becomes blank for playing. To select which sound, or track, you want to play, press a Track Select Key. Once you've selected the track, you can play all the notes you like with the note keys. The Track Select Keys are all on the bottom row, they are X, C, V, B, N, M, ., ., and /. The note keys cover the remainder of the keyboard. You may want to refer to the keyboard diagram in the next section of this chapter.

Press the START key to exit this mode and return to the EMULATOR menu.

G-Graph/Edit

This command displays a picture of the sound as a graph. It also allows you to edit the sound. After you have selected this mode, the computer will prompt you to enter a track number or an address.

The sound graph displays about 1/10th of a second of sound. The Left and Right cursor control arrows scroll the graph left and right, a whole screen at a time, allowing you to view the entire sound. Memory addresses for each screen are displayed along the bottom. The Up and Down cursor control arrows permit you to move the small blinking cursor up and down a strip. The cursor can be moved along the sound wave with joystick #1. Alter the sound wave by pressing the joystick button.

You can find your location in the sound at any time. To play the sound from the cursor location to the end, press and hold "P". To hear the sound from the beginning to the cursor location, press "O". This is useful when you're trying to find the beginning and end of a specific part of a sound.

Press ESC to exit this mode. For more information on sound waves, see Appendix C.

D-Define Track

This allows you to convert unstructured files created with the PARROT Sampler into structured files, and to rearrange sounds in memory. First, the computer will ask which track number you want to define. Enter the number you want the track to be (from 1-9). Next, enter the starting and ending addresses. You can use the Graph/Edit function to find the exact values, as explained in the section on Structuring Your Files. Then the computer will ask you to set the RPT and AUD symbols. If you want the track to repeat, type Y. If not, type N. Use the Y and N keys to set the AUD symbol. If you set the AUD symbol, the track will play automatically when the Track Select Key is pressed.

M-Move Memory

Use this command to move tracks around in memory. It's useful when you want to take a short sound out of a larger sound, or arrange tracks for unique sound effects. When you select this

17

command, the computer will prompt:

Enter a track number or starting address:

Entering a track number will allow you to move that track. Entering an address allows to you move a section of memory defined by that address. The computer will ask what address this section of memory (or this track) should be moved to. Enter the destination address. For more information, refer to the tutorial about Structuring Your File.

S-Save

This command saves files to a disk. It will save the sounds as well as the track names and locations. When the prompt appears, enter a filename (8 letters or less) and press RETURN. Check the file directory first, to be sure there is enough free space on your disk for the file.

PLAYING YOUR ATARI AS AN INSRUMENT

The PARROT program can turn your Atari computer into a musical instrument, which will play any sound you want it to. It can edit and manipulate recored sounds. It will even allow you to create your own unique sounds by combining recorded sounds, or designing your own sound waves!

If you haven't already tried the tutorial demo in Chapter 2, Playing the EMULATOR Program, go back and try it now. The step-by-step demo will show you how to start playing songs right away. It's designed to help you get the feel of playing your keyboard, and introduce you to the more advanced topics covered in this section and in the next one.

The PARROT EMULATOR program turns your Atari into a musical instrumnet. The sound files determine the sound the Atari will play. Sound files used by this program must be structured, or divided into tracks.

After you have loaded the EMULATOR program (see Playing the EMULATOR Program, Chapter 2), the EMULATOR menu will be displayed on the screen. You must load a file before you can play. Use Option 'L', and enter the file name. The Track Boxes will fill with information describing the different tracks on the sound file.

Each track is simply a group of pointers and symbols that describe a part of the audio file in memory. At the top of each track box is the track number, with arrows on each side. Next to this is the keyboard character which activates the track when you are in Play mode, called the Track Select Key. Underneath are the memory locations where the track starts and stops. Under those are the RTP and AUD symbols. If the RTP symbol appears, the track will start over when it reaches the end (repeat). If the AUD symbol appears, the track will play as soon as the Track Select Key is pressed. Otherwise, it won't play until a note key is pressed. Underneath the RPT and AUD symbols is a word which describes the sound in the track.

To select which sound, or track, you want the keyboard to play, press a Track Select Key. Once you've selected the track, you can play all the notes you like with the Note Keys. The Track Select Keys are X, C, V, B, N, M, ., ,, and /, on the bottom row on the keyboard. The rest of the keys are used for different notes, and they're called (what else?) Note Keys.

(The letters and numbers in parenthesis are Atari keyboard keys)
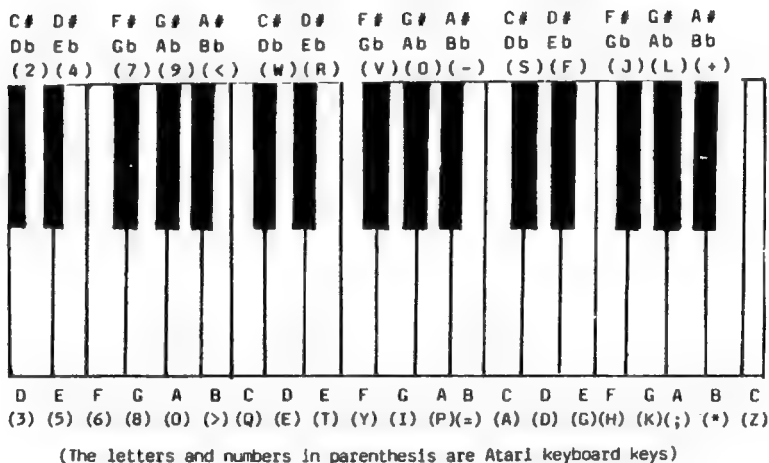
Each octave starts with the note C# (keys 2, W, and S), continues along the keys to the right, and ends on C (keys Q, A, and Z). Due to the design of the keyboard, only one key can be played at a time. This is called a monophonic keyboard.

You can achieve many different harmonic (and some very chaotic) effects by choosing the sounds of the tracks carefully. For example, track #1 could be a single instrument playing a note, track #2 could be several instruments playing a major chord together. Tracks #3 and #4 could have the same instrument or combination of instruments as #1 and #2, but playing a sharp or flat, or a minor chord. Tracks #5 and #6 could contain percussive sounds, such as a snare drum and a symbol. Tracks #7 and #8 could contain special effects sounds; laughter, sirens, explosions, etc.

With these tracks, you have solos in two different keys, choruses in two different keys, percussion, and accent effects. That's almost too much to fit into a single song, and you've still got an extra track!

You can use this planning technique to expand the range of the keyboard beyond the normal three octaves. For example, track #1 could be a note, track #2 could be the same note two octaves higher, track #3, the same note two octaves lower.

These are just some suggestions to get you started. Try experimenting with your own ideas. Use the songs in Appendix B as a staring point. Try writing your own songs, or a sound track for a silent home movie!

STRUCTURING YOUR FILES

The PARROT package is designed to make unique sound effects for BASIC programs, and to create original musical instrument sounds. The method of breaking sounds into tracks allows many sounds to be combined into one file for you to play as an instrument, or your BASIC program to load.

A sample of a game using PARROT sounds, called GUESSNUM, is on side 2 of the PARROT Master disk. This demo game was made by recording words, then defining each recorded word as a seperate track. The phrases are produced by combining the different 'words', or tracks, from the sound file GUESSNUM.DIG. You may want to load this sound file into the EMULATOR program to see what each track "says".

Structuring files can be tricky. This section first presents a list of the steps to structuring a file, then a tutorial to guide you through them. After you have had some experience structuring files you will probably need the tutorial only if a problem arises, but you may want to continue to refer to the list of steps.

1. Record the sounds on tape.

2. Use the SAMPLER to make a seperate file for each sound.

3. Load the EMULATOR program, then load the first file.

4. Graph the sound, using the Graph/Edit command.

5. Define it as a track with the Define Track command, removing any extra silences before and after the sound.

6. Set the track status (the RPT and AUD symbols).

7. Move the track to the lowest available meory location.

8. Repeat steps 3-7 for the other sounds, loading them in above the previously defined tracks. Be careful, don't

22

overlap them.

9. Save the completed file to disk.

The first two steps are simple. First, record the sounds you want to use on tape. Then, use the Sampler to make separate files, one sound for each file. These files are unstructured, which means they are not divided into tracks. Now use the Emulator to combine the sounds into one file with three tracks, and save it to disk in this format.

To do this, first reload the Emulator program, to clear the memory, and load the first file. The computer will print "XXXX.DIG is an unstructured file which is XXXXX bytes long. Load at what address?" The lowest available memory address is displayed. You can enter your own address, but it's usually best to use the one already printed by pressing RETURN. If the file is small enough to fit completely in memory, it will load. If the file is larger than the available memory, you must decide which part to load. A strip of blocks (each representing 1K) will appear. Move the cursor arrows to the section you want. Press RETURN. The computer will scan through the file and load the part you have specified.

The sound you have recorded will have silence before and after it. These extra silences waste valuable space. To save space, find the exact beginning and ending points of the sound and define it as a track, using the Graph/Edit command, then move it to the lowest available memory location. Type G and RETURN, and the computer will respond with "Enter a track no. or an address". Since we don't have any tracks yet, enter the lowest address that appears in the memory strip. This is the beginning of your memory. Now what appears is the visual graph of part of the sound in the memory, in a left-to-right, top-to-bottom fashion. On this screen you will have a small blinking cursor controlled with joystick #1. You can move along the sound waves, and alter them by holding down the fire button and moving the joystick. For now though, we'll use the cursor to find the starting and ending points of the sound. Your screen probably shows five straight lines, with little dots, which are static. This screen only shows 1/10 of a second of sound. To see more, press the left and right cursor control arrows

23

to move forward or back a whole screen, until some wavy lines appear. This is your sound. (To learn about the nature of the waves, see Appendix C: Characteristics of Waves). Now move the cursor to the exact point where the sound starts. Use the Up and Down cursor control arrows to move up or down a strip. When you've positioned the cursor, write down the location number that appears at the bottom of the screen. This is the starting point of the sound. You can listen to the sound from the cursor to the end of the sound by pressing the 'O' key. The 'P' key will play from the beginning of the sound to the cursor. Now scroll along the graph using the right arrow button until the waves disappear. Move the cursor to the point where the sound quits, and write this number down.

Now you can define a track for the sound. Press ESC to go back to the menu screen, and press D and RETURN to define a track. The computer will print "Which track?" Since no tracks are defined yet, type a 1 and RETURN.

Next, type in the starting and ending addresses of that track. You must also set the RPT and AUD symbols. RPT will make the track repeat. AUD will make it play as soon as it's Track Select Key is pressed. Enter a name for the track, 8 letters or less, to remind you of what sound it is. If you do not want a name, just type RETURN.

The sound is now isolated and defined as a track. It's ready to be moved to the lowest available memory location, so other sounds can be loaded in above it. Use the Move Memory command to move the sound. Type M and RETURN and the computer will respond with "Enter a track number or an address:". We want to move track 1, so type 1 and RETURN. (If you typed an address, you would be entering the starting and ending address of a memory segment to be moved). Now the computer will print "What address should this be moved to?" Enter the lowest free memory location, (the low number on your memory status line), and the computer will move the memory defined by track 1 to that location. Notice that the address in the Track Box for track #1 changes accordingly.

Now you can load in the other sounds and combine them with the first one by using the same steps. Just make sure you do not overlap the tracks when you move them, and be sure to load new files in above the tracks you have already defined.

24

Once you have made your file, save it on disk. Type S and RETURN and the computer will respond with "Enter a name (8 letters max):. Type a filename and press RETURN. The computer will save your file on disk, along with all the track values. Congratulations! You have just structured a file.

Using PARROT files in BASIC Programs

THE LOADPLAY.LST SUBROUTINE

With PARROT, you can make your own BASIC programs talk, sing, or play music using sound files made with PARROT. The subroutine called LOADPLAY.LST on side 2 of the PARROT master disk allows your program to load sound files into memory, and play the tracks at any speed, in any order you want.

The LOADPLAY subroutine is divided into two parts. The first part loads the sound file into memory. The second part plays the tracks to your specifications.

Restrictions

The entire routine occupies lines 32000 through 32500, so your program cannot use these line numbers. It uses the string names STRING$, PLAY$, TRACK$, DUMMY$, BUF$, and the variable names FILESIZE, SS, XX and SPEED. These variable and string names must not be used in your program.

Using LOADPLAY.LST

To use this subroutine, put the BASIC cartridge into your computer, and boot up one of your own disks with DOS on it. (XL and XE owners see the NOTE below). When the READY prompt appears, insert the back side of the PARROT disk into your drive. Now type:
ENTER "D:LOADPLAY.LST".

First, replace the XXXXXXX in line 32030 with the name of your sound file. Then, at the start of your program, before you do anything else, GOSUB 32000. This sets up the subroutine and loads in the sound file you specified in line 32030. It also sets up the machine language routines necessary to play the sounds.

Next, set up the second part of the routine. To produce sounds in your programs, you must set the variables PLAY$ and SPEED. SPEED is the speed at which you want the tracks played, and can be any number from 1 to 255 (54 is normal speed). PLAY$ will be the track numbers you want to play, in the order you want to play them. Type in the track numbers together without spaces. For example, if you want to play tracks 5, 3, 6, and 1 at speed 54, make PLAY$="5361" and SPEED=54.

26

When you want to play the sound, use the command GOSUB 32500.
The screen will go blank while the tracks play. This is necessary;
otherwise the sound would be very poor. The tracks will play
consecutively, without any pause, and then the subroutine will
jump back to your program. The routine at 32500 does not change
the values of PLAY$ or SPEED, so you could set SPEED=60 at the
beginning of your program, and it would remain untouched.

To see an example of a PARROT file used in a BASIC program,
run the BASIC program called GUESSNUM on side 2 of the PARROT
master disk. It's sound file is GUESSNUM.DIG. You may want to
examine this file with the Emulator program, to see what each
track "says".

In the GUESSNUM program, the computer pieces words together to
form phrases. Each track is a word or group of words. When they
are played together, they form sentences, like "That's a little
too high".

IMPORTANT: This routine sets up a buffer the size of the file
you load.The size is stored in variable SS. Your program must be
small enough so the subroutine can dimension the buffer to the
full size of the file, or you'll run out of memory. You can use
the EMULATOR to shorten tracks if needed, or load the sounds in
stages as described below. You can get back all your memory after
the sounds have played by using the CLR command, but remember -
this command clears out your variables and strings so you'll have
to reset them.

Loading More Sounds In (Reloading Your Buffer)
You can reload your buffer if you want to play more sounds
later in your program, but don't have enough memory to hold them
all at the same time. To do this, you must determine the size of
the largest sound file. You can load in the sound files, then look
at the value of SS. You can also get a good idea of the size of
the sound file by multipying the number of sectors by 125. You
must Dimension the string BUF$ to the largest size. Move the
Dimension statement which sets the size of BUF$, line 32038, to
the start of your program, and replace SS with the correct size.
Then set the filename in line 32030 to the name of the first sound
file you want to load. GOSUB 32000 as before. Then, each time you

27

want to reload and play a different sound file, change the filename in line 32030, and GOSUB 32030.

USING A 130XE OR A SPECIAL DOS

There's two ways to take advantage of the extra memory available in a 130XE when you're using your PARROT sound files. The first way uses DOS 2.5. The second way requires the BASIC XE cartridge from Optimal Systems Software (OSS).

The first way to use the extra memory on the 130XE is to use it as a RAM disk with DOS 2.5. First, load the whole sound file out to the RAM disk. Then, while the first segment of the file is playing, you can quickly load the next segment from the RAM disk.

The second way of using the 130XE's extra memory is to use the BASIC XE cartridge from OSS, and the standard BASIC subroutines from the PARROT disk. BASIC XE gives you 64K variables. This lets you address the extra memory directly from your program. The PARROT subroutines are completely compatible with BASIC XE, so don't have to change them. The disadvantage with this method is that your program will not run on another computer without the BASIC XE cartridge. You can purchase BASIC XE from your local computer store, or check your favorite Atari magazine for mail order sources.

PARROT can work with any DOS you choose. If you want to use double density, a hard disk, or access more than 128K, then you'll need to use a different DOS.

It's easy to use PARROT with another DOS. To use a different DOS with the PLAYER program or your own BASIC program and PARROT sound files, just copy the program onto a disk with your DOS. To use your DOS with the SAMPLER or EMULATOR programs, follow these steps:

1) Load your DOS into the computer.

2) Remove your DOS disk and insert the PARROT disk in drive 1. Do a Binary Load on the file "AUTORUN.SYS".

XL and XE Owners NOTE:
    To use BASIC with an XL or XE, Turn the computer on WITHOUT touching the OPTION key.

28

Creating Custom Sounds

The PARROT package allows you to draw your own sound waves from scratch, or modify the sound waves of previously digitized sounds with your joystick for unusual and creative sounds effects. The Graph/Edit function of the PARROT EMULATOR program gives you the ability create your own custom sounds by drawing your own sound waves, or change recorded sound waves. You can create an unlimited number of sounds, and learn about wave forms at the same time.

Drawing your own sound waves is easy and fun. It's also a good way to learn how different wave shapes sound. To draw your own wave, first load the PARROT EMULATOR program. Then choose 'G' for Graph/Edit. When the program asks for a track, just choose track 1 and press RETURN (if you press RETURN without pressing a track number the program will return you to the Commad:? prompt). Now you can draw a pattern or wave form using your joystick. The simplest waves to draw are square waves, like this:
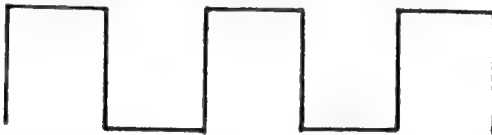
You only need to draw a few repetitions of a wave, because the EMULATOR program can make the track be a repeating track.

It's possible to listen to the sound wave after you have drawn it, without leaving the Grpah/Edit function. Position the cursor at the begining of the wave and press 'O', or position it at the end of the sound wave and press 'P'. If you have only drawn a few repitions of the wave, the sound may be too short to really hear. Remember, each screen represents about 1/10th of a second of sound.

To listen to the sound for a longer time period, position the cursor by the beginning and end of the wave, and write down the memory locations of each. Hit ESC to return to the main menu.

Then, use Define Track function to set up the wave as a repeating track. After selecting option 'D'-Define Track from the EMULATOR menu, type in the beginning and ending addresses of the

wave. When asked if you want the track to repeat, type 'Y'.

Once the wave has been defined as a repeating track, you can play it. Press 'P' and RETURN to enter the Play Mode (remember the screen will go blank). Hit the Track Select Key for the wave's track.

Now you can use your custom sound wave any way you like; to play a song, or use as a special effect. To change your wave or draw a new one, just return to the Graph/Edit function. You can get some very interesting results by changing the wave pattern as you go along the wave. You can try making the waves larger and smaller, or switch between curvy, square, and triangular shapes. You can also edit sounds recorded with the PARROT interface to create original sounds. Just keep in mind that a full screen in the Graph mode is only about 1/10th of a second of sound played at normal speed. For more information about the different characteristics of sound waves, refer to Appendix C.

The PARROT Audio File Player

The PARROT Audio FIle Player is a simple menu program that will load and play your PARROT sound files. It will play both structured and unstructured files of any length, at any speed you choose. You'll find it on the back of your PARROT Master Disk. Boot the back side of the PARROT disk (without BASIC) and it will run automatically.

This program can be copied to your own disks, to play your sound files. Format your disk and put DOS on it. Your disk must have DOS on it or the Audio File Player won't work. Then, using DOS option 'O' or 'C', copy the AUTORUN.SYS file from the back of the PARROT Master disk onto your disk. After that, just copy your sound files.

The disk you've made will boot automatically when you use it. A mini-menu will appear on te screen when the program's finished loading. Pick the sound file you want to hear, enter the speed, then listen and enjoy!

APPENDIX A
Trouble Shooting

1. Be sure BASIC is disabled. BASIC uses up valuable memory space and can overlay sounds stored in the computer. XL and XE owners must hold down the OPTION key while the computer is being turned on.

2. Check to see that the PARROT interface is plugged into joystick port #2, NOT port 1. A joystick should be plugged into port #1 for use with the Emulator program.

3. Use the Fine-Tune mode of Sampler to adjust the sound. The volume of the input (tape player, radio, etc.) must be adjusted and the tuning control on the PARROT interface must be set. If you still have trouble, try hooking an ear-phone or speaker to your input source. If the sound is bad, the recording will be bad. If you are using a microphone, try recording on a tape recorder to be sure it works.

4. All PARROT Interfaces are pre-tested before shipping, but, if you think yours is faulty, it has a full 90 day replacement warrany, like your diskette. If the Interface fails after that time, there is a $6.50 replacement fee. See the warranty page at the back of this manual for details.

Some Songs To Try

This chapter contains "sheet music" for the Atari keyboard. Under the titles are suggested sounds and files to play these songs with. The first line indicates which key to press, the second indicates the durration, or the number of beats the key should be held down.

Easy

When the Saints go Marching In

```
Q T Y I   Q T Y I   Q T Y I Y Q T E
1 1 1 5   1 1 1 5   1 1 1 2 2 2 2 6
```

```
T E Q Q T I I I Y   T Y I T Q E Q
1 1 3 1 2 1 1 1 5   1 1 2 2 2 2 6
```

Give My Regards to Broadway

```
I P = A D A =   I P P P P = = I
1 2 1 2 2 4 3   1 1 1 1 1 2 2 7
```

```
I P = A P = A D = P I A P = A D
1 2 1 2 2 2 2 1 1 1 1 2 2 2 2 7
```

On Top of Old Smokey

```
Q Q T I A P        P Y I P I              Q Q T I I E        T Y T E Q
1 1 1 1 3 5        1 1 1 1 8              1 1 1 1 3 5        1 1 1 1 8
```

Medium

Frankie & Johnny

-M-

```
Q E T P I P Q Q        Q E T P I T Q
1 1 1 2 1 2 2 6        1 1 1 2 1 2 6
```

-N-

```
Q Y I P A D P A A        A A A = P I T R E
2 1 1 1 3 1 2 2 4        2 1 1 2 2 2 2 2 8
```

-M-

```
P I P I T Q
1 1 1 1 2 6
```

Hard

The Start Spangled Banner

Repeat this line once
```
A P Y P A M ; K M P = A        A A ; K M G D G M M A P Y
2 1 3 3 3 6 2 1 2 2 2 6        1 1 3 1 2 4 1 1 2 2 2 2 2
```

```
; ; ; + Z Z + ; K ; + +        + ; K M G D G M P = A
1 1 2 2 2 4 1 1 2 2 2 4        2 3 1 2 4 1 1 2 2 2 2
```

```
A M M M G D D D K + ; K M M G        A A M K ; + Z M K ; + K M
2 2 2 1 1 2 2 2 2 1 1 1 1 2 4        1 1 3 1 1 1 6 1 1 4 1 3 4
```

34

Characteristics Of Waves

This is a description of how the wave's shape changes the way it sounds:

LOUDNESS or VOLUME

Quiet Sound   Loud Sound

FREQUENCY or PITCH

Low Sound   High Sound

A single wave contains all of the sounds merged together. For example if this wave:

and this wave:

are combined together, the result is this wave:

Static in the sound will produce tiny jumps in the sound wave, like this:

If the volume was too loud while you recorded your sound, the

upper and lower edges of the wave will be flattened, or clipped:

The sound quality is greatly reduced when clipping occurs.

Glossary of Terms

Buffer - A buffer is an area of memory used for input and output. These processes seem slow to the Atari's CPU, so the CPU will set aside a special area of memory for external devices to access at their own speeds. The input (or output) devices transfer the data to (or from) this designated area. When it's full, the CPU can access all the data at speeds much faster than the input devices are capable of. When it's empty, the CPU can fill it much faster than otuput devices can accept data. While the external devices are buzy filling (or emptying) the buffer, the CPU is free to perform other tasks.

Digital Sound - Computers store information in a series of binary numbers. Taking information from a normal form, such as light or sound, and converting it to a series of binary digits is called digitization. The PARROT interface 'listens' to the sound as it is played in. As it listens, it samples the sound, and converts that sound sample to a binary number. At normal recording speeds, the PARROT interface will digitize about 8,000 samples per second. Longer recording times reduce the sampling rate, so the sound quality is lower. A Compact Disk player (CD) uses the same process, but takes about 80,000 samples per second.

EMULATOR - This is the program that enables your computer to emulate, or act like, a musical instrument. It also supplies the functions used to manipulate the stored sounds. For a complete explanation of this programs capabilities, see Chapter 2, Playing the EMULATOR, Chapter 4, Using PARROT Sound Files, Chapter 5, Using PARROT Files in BASIC Programs, and Chapter 6, Creating Custom Sounds.

Gain Control Knob - This is the knob on the top of the PARROT Audio Interface. It regulates the voltage of the sound sent to the internal PARROT Interface circuitry. Use this knob in connection with your volume and other sound controls to record the best sound.

37

Input Jack - This is the jack on the top of the PARROT Audio Interface. Plug your sound source or jumper wire in here.

Memory Location - The computer's memory is divided into seperate slots, like mailboxes, called locations. Each location has it's own number. Some memory locations are designated for specific informaton only. The spot where tracks are stored are identified by they're first and last memory locations.

PARROT Audio Interface - This is the paddle-like device included with your PARROT package. It accepts the sound from the sound source, and converts it into binary data. For more information, refer to Chapter 1.

SAMPLER - The SAMPLER program is used with the PARROT Audio Interface to create sound files. These sound files are unstructured. You can fine-tune, record, play and save sound, and perform other functons with this program. See Chapter 3 for details.

Speed - This can be either the speed at which sound is recorded or the speed at which it is played back. Speed is controlled by entering a number at the appropriate computer prompts. Speed can have tremendous effects on the quality of the recordings. To improve the sound quality, slow down the sound source, and record at a slower speed. Play the recording back at normal speed. Experimenting with different recording and play back speeds can result in some unusual effects.

Sound Source - This can be virtually anything that produces sound. You can use a microphone, tape recorder, radio, CD Player, TV, or VCR. Depending on your source and equipment, you can connect it directly to the PARROT, or connect it through a jumper wire. If it can't be connected, you can record the sound on a tape player, and then use the tape player as the sound source.

Structred Files - Structured files are files that have been divided into tracks. To structure a file, see Chapter 4, Structuring Your Files.

Track - A track is a segment of a structured file. Tracks can be
used with the EMULATOR program to turn your computer into an
instrument. When a structured file is loaded into the EMULATOR
program, each track will have it's own track box, with all the
information about the track, and it's own Track Select Key. See
Chapter 4 for more information.

Track Select Key - When using your Atari as an instrument, the
Track Select Keys are used to choose which track, or sound, you
want to use. Each track has it's own Track Select Key. Tracks that
are identified as AUD will play as soon as the Track Select Key is
pressed. Others will not play until the Note keys are pressed. See
the keyboard chart on page ? for the location of these keys.

Unstructured Files - Unstructured files are the 'raw' files
created with the PARROT Audio Interface. They are not divided into
tracks. They can be played back with the SAMPLER program, or the
PARROT Audio File Player. They must be structured before the can
be used as sounds when the Atari is played as an instrument.

LIMITED WARRANTY

Alpha Systems warrants the original purchaser of this computer software product that the recording medium on which the software programs are recorded will be free from defects in materials and workmanship for ninety days from the date of purchase. Defective media returned by the purchaser during that ninety day period will be replaced without charge, provided that the returned media have not been subjected to misuse, damage, or excessive wear.

Following the initial ninety day warranty period, defective media will be replaced for a replacement fee of $6.50.

Defective media should be returned to:

ALPHA SYSTEMS
4435 Maplepark RD
Stow, Ohio, 44224

in protective packaging accompanied by: (1) a brief statement describing the defect; (2) a $6.50 check or money order (if beyond the ninety day warranty period); (3) your return address; (4) the problem disk.

What is Not Covered by this Warranty

This warranty does not apply to the software programs themselves. the programs are provided "as is".

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We at Alpha Systems are sincerely interested in bringing you the best possible products at the lowest possible prices. Please write us if you experience any difficulties with our products, or have any comments or ideas for improvements. We will do our best to make our products better meet your needs. When you write, please enclose the following: 1) Your name, address, and phone number. 2) Your comments, or a description of your problem. 3) A description of your system. 4) If you are reporting a problem, please also include a description of what you were doing when the problem occurred, any printouts or other output showing the problem if possible, and any suggestions you may have regarding the cause and solution.

PARROT
V 2.0 Update Sheet

IMPORTANT: This sheet contains changes that have been made to your version of PARROT software. Since your version is so new, these changes are not discussed in your manual. Keep this sheet for future reference. READ YOUR MANUAL FIRST so you will understand these changes.

When using the Emulator tutorial, load the NOTES file instead of the SMOKE file. The SMOKE file is not present on your disk.

Note On Sound Quality: All of the sample sounds on your PARROT disk were created with hardware and software identical to your own. They were recorded on an Atari 400 with 48K, and a Sony Walkman. Your sound samples should sound just as good. However, there are differences between the older 400 and 800 Atari computers, and the newer XL and XE computers, that can cause different results. If you are using an Atari 400 or 800 computer, you will probably get the best results from a powered sound source, such as a tape recorder (a Sony Walkman, for example), or a stereo amp. The newer XL and XE computers usually work best with a very low power recorder (an inexpensive portable, for example) or a powered microphone. Of course, fine tuning the input device is critical, but, if adjusting the sound controls on the sound source don't improve the results, you should try an alternate sound source. In general, the best quality sound is obtained with the older Atari models (400 and 800), because they have greater paddle port sensitivity.

LOADING - Follow the original loading instructions, unless you have a 130XE or a computer with a compatible memory upgrade. All 48K and 64K computers should boot the PARROT disk WITHOUT BASIC (XL users should hold down the the OPTION button while you turn on the computer). If you are using a 130XE, or a 128K machine, boot WITH BASIC installed to use the XE Sampler or the PARROT Player. Boot without BASIC when you run the Emulator program.

The Main Menu (disk side 1) - A new item has been added to the main menu. The XE Sampler (Option 3) is only for machines with at least 128K of memory, such as a 130XE or a compatible upgrade. If you wish to use this option, refer to those instructions.

NEW FEATURE: You can now abort any recording or playback option by pressing the OPTION button. This works on the PARROT Player as well as on the Samplers. It allows you to interrupt recording or playback at any time.

The Sampler - The Recording and Fine Tune options of the Sampler have been combined to make recording easier. Select this option from the Sampler menu, then fine tune as explained in the manual. WHEN YOU WISH TO BEGIN RECORDING, PRESS START. This allows you to accurately time the start of the recording. To abort the recording, or to exit

the fine tuning without recording, press OPTION.

NOTE: Only unstructured files can be loaded into the Sampler.
THRILLER, on side 2 of the disk, is an example.

PARROT Player (disk side 2) - The PARROT Player program has been
enhanced to take full advantage of the extra memory available on a
130XE. If you are using a machine with extra memory, you can now load
larger files, or load more than one file at a time. Just follow the
instructions on the screen.

The XE Sampler - The XE Sampler allows sampling up to 87K of sound.
This produces approximately 38 seconds of continuously sound in the
highest quality sound mode. The XE Sampler also lets you move and
combine separate samples, in any order you want.

NOTE: Saving an 87K sample requires almost an entire single density
diskette, so a Format Disk Option has been included with the XE
Sampler. It's a good idea to save long samples on a freshly formatted
disk, so you don't accidentally run out of space.

To use the XE Sampler, follow the instructions for the regular
sampler, with the exception of these changes. When the Load, Save, or
Monitor/Record functions are chosen, you'll be asked which part of
memory you want to work with. A visual display of memory will be
presented, with arrows pointing to the starting and ending points.
Move the Starting Point arrow with the   keys. Move the Ending
Point arrow by holding down the SHIFT key and pressing the   or
key. By moving the arrows you can load different files into different
parts of memory. This lets you lead one file into another, or splice
out parts you don't want. You can use the Emulator program to do
these things, too.

NOTE: Each line "|" represents 1K of memory.

You can play these large samples with the Play Option, or save
them to disk, and load them into the Player Program (on the back of
the disk).